UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/674,768 | 09/30/2003 | Roland D. Green | 700706.90238 | 4455 |

7590 12/16/2005

Nicholas J. Seay
Quarles & Brady LLP
P O Box 2113
Madison, WI 53701-2113

| EXAMINER | |
|---|---|
| NAGPAUL, JYOTI | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1743 | |

DATE MAILED: 12/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/674,768 | GREEN ET AL. | |
| | Examiner | Art Unit | |
| | Jyoti Nagpaul | 1743 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *03 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1 and 7-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 7-13* is/are rejected.

7)☐ Claim(s) *11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

Amendment filed on October 3, 2005 has been acknowledged. Claims 1 and 7-13 are pending.

### *Response to Amendment*

Rejection of Claims 1,7-10 and 13 as being anticipated by Fernwood has been *withdrawn* in light of applicant's remarks.

Rejection of Claims 11 –12 as being unpatentable over Fernwood in view of Bell has been *withdrawn* in light of applicant's remarks.

### *Claim Objections*

**Claim 11** is objected to because of the following informalities: The status identifier recites "original", it should state –currently amended--. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. **Claims 1,7-10 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Root in view of Foder.

Root teaches a multiwell filtration assembly for processing biological or chemical samples. The method comprising the steps of placing the sample to be loaded onto a planar sample loading area (80) in physical alignment with the location of the subarrays (78) on the microarray (122), the sample loading array (64) being a planar member with a plurality of microchannels (92) formed extending into it and extending throughout, the samples being loaded into the microchannels and a porous membrane (34) attached to it on one of its faces. (See Figure 4) The membrane on the side of the sample loading array (80) away from the subarray (78) to allow for the selecting passing of liquids and molecules through the membrane (34) and through the micro-channels (92). Root further teaches the microarray (122) comprising plurality of subarrays (78) on a common substrate/microtitre plate. (See Figure 4) Root does not explicitly teach depositing

different samples in a plurality of microchannels. However, it is inherently known that any type of biological sample may be deposited in any of the microchannels (92) depending on the analysis required. The method further comprises placing the sample loading array (80) in contact with the microarray (122) under conditions so that molecules in the samples can hybridize to probes in the aligned subarrays (78), the conditions including fluid placed on the membrane to permit the samples in the microchannels to flow into contact with the substrate/microtitre plate on the microarray (122) so that hybridization reaction can occur. (See Figure 4) The method further comprises of placing the sample loading array (80) in contact with the microarray (78) such that the ends of the microchannels opposite of the membrane (34) are aligned with the subarrays (78) of the microarray (122), so that different sample are placed in contact with the different subarrays (78) of the microarray (122) and a hybridization can occur. Root teaches, "use of the filter in a more active sense wherein a first substance is immobilized in the filter and a reactant is applied to the filter for reacting with the substance, e.g., the immobilization of single strand RNA or DNA on a nitrocellulose membrane for use in nucleic acid hybridization." (See Col. 1, Lines 19-25) Root further teaches the samples are placed in contact with the subarray (78) using pressure. (See Figure 14) Root further teaches the samples are placed in contact with the subarray (78) using a vacuum (62). (See Figure 4) Root further teaches the sample is deposited into the plurality of microchannels (92) using a delivery system/cover (202) capable of simultaneous delivery of samples to multiple sites. (See Figure 14)

Foder teaches methods for comparing and identifying differences in nucleic acid sequences using a plurality of sequence specific recognition reagents bound to a solid surface/substrate. Foder further teaches a substrate having a microarray of biological polymers carried on the substrate surface. (See abstract)

Root fails to explicitly disclose microarrays. Root also fails to explicitly teach a gasket located between the sample loading array (80) and microarray (78). Root does teach gasket (213) located between the cover (202) and the filter strip (18).

It is conventionally known in the art. It would have been obvious to one of ordinary skill to modify the device of Root such that the microchannels (122) be microarrays (122) as exactly taught by Foder in order to analyze and collect data about gene expression in cells and organisms.

It is conventionally known in the art. It would have been obvious to one having ordinary skill to provide the device of Root such that a gasket is located between the sample loading array and microarray in order prevent cross contamination between samples.

5. **Claims 11 –12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Root in view of Foder in further in view of Bell (US 5858194).

Refer above for the teachings of Root and Foder.

Root fails to teach the sub-arrays are divided by a hydrophobic barrier area, wherein the area comprises an activated substrate and the barrier comprises of hydrophobic group-bearing phosphoramidite.

Bell discloses a device for separation and analysis of biological molecules. The device comprises capillaries and corresponding receptacles. The adjacent receptacles (40) are divided by a hydrophobic barrier area/inhibitor. (Col. 6, Lines 34-35) Phosphoramidite chemistry is conventionally known in the art. It would have been obvious to one having ordinary skill to provide a inhibitor/activated substrate and hydrophobic barrier area in order to retard the flow toward the subarrays to increase control of the liquid flow into the sub-arrays thus decreasing cross-contamination between subarrays.

***Response to Arguments***

6. Applicant's arguments with respect to claims 1 and 7-13 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jyoti Nagpaul whose telephone number is 571-272-1273. The examiner can normally be reached on Monday thru Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JN

Jill Warden
Supervisory Patent Examiner
Technology Center 1700